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Communication in Health-Related Online Social Support Groups/Communities: A Review of Research on Predictors of Participation, Applications of Social Support Theory, and Health Outcomes

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Abstract

This article reviews literature on online support groups/communities for individuals facing health concerns. Specifically, the article focuses on predictors of online support group/community participation, major theoretical frameworks that have been applied to the study of online support groups/communities, and coping strategies and health outcomes for individuals facing health concerns. Finally, the article discusses the strengths and limitations of existing empirical studies in this area; presents a critique of the relative merits and limitations of a number of theoretical frameworks that have been applied to the study of online support groups/communities for people facing health concerns; and it provides an agenda for future communication research on health-related online support groups/communities.

Highlights

- Overview of growth and impact of online support groups/communities
- Predictors of online support group/community participation
- Key theoretical frameworks applied to online support groups/communities
- Critique of online support group theory and empirical studies
- Overview and critique of online support groups/communities and health outcomes
- Agenda for future research

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Keywords: Online Social Support Groups/Communities, Health Communication, Social Support Theory, Computer-Mediated Communication, Coping, Health Outcomes

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The ability to effectively mobilize social support following a stressful life event is central to a person's health and well-being (Goldsmith, 2004; Uchino, 2004). Few life events are as stressful as being diagnosed with a disease, living with chronic illness, or managing other physical or mental health concerns. The benefits of social support have been demonstrated across a wide variety of contexts and populations in terms of helping individuals cope better with health-related problems, and leading to positive psychological and physical health outcomes (Cohen &

McKay, 1984; Goldsmith, 2004; Thoits, 2011). In the past 15 years, scholars from many disciplines, including communication, have become increasingly interested in the growing use of new technologies, such as the Internet and social media, for social support in terms of helping individuals cope with health-related issues (Chen & Choi, 2011; Gustafson et al., 2005; Lieberman & Goldstein, 2006; Tanis, 2008; Wright & Bell, 2003; Wright, Johnson, Averbek, & Bernard, 2011).

The ubiquitous use of personal computers and mobile

devices, coupled with a growing ease of access to the Internet, has proliferated online support groups/communities. While there are no widely accepted definitions in the literature, one definition that has been used to some extent is Preece's (2001) contention that an online support community is "any virtual social space where people come together to get and give information or support, to learn, or to find company" (p. 348). The popularity and expansion of online support groups/communities as well as other, less formal, types of online social support groups (e.g., informal groups within Facebook) have led social support researchers to investigate a variety of communication phenomena related to online support groups/communities. Despite a growing amount of theory development and empirical research in this area, there remain many questions regarding the psychological and relational predispositions of online support group/community participants, social support communication processes, and the relationships among social support and key health outcomes.

In an attempt to shed light on these questions, this article reviews the current literature on communication issues related to social support within online support groups/communities for individuals facing health concerns. While social support for health-related concerns certainly occurs in other contexts of online communication (e.g., personal emails, texts) as well as in face-to-face interactions, covering the literature on these everyday types of social support is beyond the scope of this article. Specifically, this article focuses on theoretical and empirical studies that have been published within the communication and health communication literature (and some from related disciplines, such as public health, nursing, and psychology) during the past 15 years. The author searched for relevant literature by conducting key word searches for terms related to communication and online social support groups/communities on various search engines in an effort to locate articles and book chapters for the review. In addition, the typology for the current review (e.g., the major sections of the article presented below) was also derived from examining themes from existing published reviews and/or meta-analyses of online support groups/communities (See Hong, Pena-Purcell, & Ory, 2012; Mo, Malik, & Coulson, 2009; Rains, Peterson, & Wright, 2015; Rains & Young, 2009; Wright & Bell, 2003). However, the current article differs

from these earlier reviews by including both empirical work as well as theoretical perspectives that have been applied to the study of online social support in previous communication research in an attempt to organize what often appear to be disparate areas of research and theory development in the online support groups/community literature. For example, many theories relevant to online support are discussed at length in certain types of publications (mostly book chapters), but only a small amount of space is typically devoted to theory in published empirical studies in the online support literature. The current article attempts to discuss both theoretical and empirical work in greater depth than is seen in previous reviews. Finally, the article discusses the strengths and limitations of existing empirical studies in this area; presents a critique of the relative merits and limitations of a number of theoretical frameworks that have been applied to the study of online support groups/communities for people facing health concerns; and it provides an agenda for future communication research on health-related online support groups/communities.

Growth of Online Support Groups/Communities

Over the past two decades, we have witnessed tremendous growth in online social support group/community activity. The use of online support groups/communities for people facing health concerns has proliferated during this time period, expanding from several thousand support groups/communities in the late 1990's to hundreds of thousands of groups/communities by 2012 (National Cancer Institute, 2013; Fox, 2012; Koch-Weser, Bradshaw, Gualtieri, & Gallagher, 2010; Wright & Bell, 2003). Several studies within the last five years have documented the growth of online information-seeking and support for people coping with health concerns. For example, 60% of adult Internet users in 2011 reported that they engaged in online activities such as reading someone else's commentary or experience about health issues (Fox, 2011). The National Cancer Institute (2013) estimates that 15% of all adult Americans used a health-related peer support community during 2012. Finally, data from the Pew Internet and American Life Project (Fox, 2012) suggest that one in five Internet users used online groups/communities for peer support during 2011.

Predictors of Participation in Online Support Groups/Communities

The following sections examine each of the following predictors of participation in online support groups/communities: (1) limited access to adequate support within traditional social network(s), (2) living with health-related stigma, (3) perceived similarity/credibility of support providers, and (4) convenience and other features of computer-mediated communication.

Limited Access to Adequate Support within Traditional Social Network(s)

A variable that appears to predict whether or not individuals participate in online support groups/communities (as well as their sustained membership in these groups) is if they experience limited access to traditional face-to-face social support resources. Compared to face-to-face support networks, online health support groups/communities are frequently used by individuals with rare health conditions/issues that are not well understood by physicians, conditions/issues that are difficult for health care providers to explain in layperson terms, or if members of one's primary social network (i.e., friends and family members) have limited knowledge of their health condition (Campbell-Grossman, Hudson, Keating-Lefler, & Heusinkvelt, 2009; Tanis, 2008; Tong, Heinmann-LaFave, Jeon, Kolodziej-Smith, & Warshay, 2013). Due to these issues, many people feel that they receive inadequate informational support from their traditional social networks and health care providers; and they may perceive online support groups/communities as a better alternative for receiving health information (Wicks et al., 2010).

Online sources of social support appear to replace or extend traditional offline support networks in terms of providing greater access to the increased social capital available in a larger, easier to maintain, network of individuals who are often geographically separated (Chung, 2013; Ellison, Steinfield, & Lampe, 2007; Walther & Boyd, 2002). The Internet can help individuals facing health concerns during times of stress and transition to access new networks of support, such as connections with others facing the same or similar transitions and stressors (such as if a person moves to a small town where the likelihood of meeting others living with a similar health condition

is low). In general, online support has been shown to be an important resource which helps people to connect with others, gather information, share experiences, and reduce uncertainty about health-related issues (Chen & Wellman, 2008; Chen & Choi, 2011; Tanis, 2008). Similarly, older adults or people with disabilities may have limited mobility, making it difficult to form and maintain relationships with others in the offline world (Braithwaite, Waldron, & Finn, 1999). As a result, they may voluntarily withdraw from interacting with members of offline networks and turn to the convenience of online support in an effort to reduce feelings of loneliness and social isolation.

Health-Related Stigma

A second important predictor of participating in some type of online support group/community is the degree to which individuals feel they are stigmatized because of the health issues they face (Ballantine & Stephenson, 2011; Faith, Thorburn, & Sinky, 2016; Lewis, Thomas, Blood, Castle, Hyde, & Komesaroff, 2011; Rains, 2014; Wright & Rains, 2013). Health-related stigma is a significant problem that many individuals facing health concerns have to deal with on a daily basis (Herek & Glunt, 1988). It has been linked to reductions in the size of individuals' support networks, problems discussing concerns with others, dissatisfaction with one's support network, reduced compliance with treatment recommendations, and increased health problems (Venable, Carey, Blair, & Littlewood, 2006). Stigmatized health issues have been linked to increased stress and depression (Riggs, Vosvick, & Stallings, 2007; Wolitski, Pals, Kidder, Courtenay-Quirk, & Holtgrave, 2008), substance abuse, anxiety, and increased physical health problems (Duncan, Hart, Scoular, & Bigrigg, 2001).

These negative health effects of stigma can even be seen within the general health care system. Individuals who live with stigmatized health problems are less likely to benefit from the depth and breadth of available physical health care services than people with non-stigmatized health concerns (Corrigan & Phelan, 2004). Another form of stigma, self-stigma, refers to perceptions that oneself is socially unacceptable as a result of some flaw or characteristic, including living with a health problem (Vogel, Wade, & Haake, 2006). Research by Vogel, Wade, and Hackler (2007) indicates that greater levels of public

stigma are associated with greater levels of self-stigma, which result in less favorable attitudes toward treatment and a lower willingness to seek support. Self-perceptions of health-related stigma can lead to diminished levels of self-esteem and self-efficacy (Herek & Glunt, 1988). Researchers have found that people with stigmatized health problems are drawn to online support groups/communities because these groups/communities help them to manage stigma (Lewis et al., 2011; Rains, 2014; Wright & Miller, 2010; Wright & Rains, 2013).

Perceived Similarity/Credibility of Online Support Providers

A third predictor of participation in online support groups/communities is perceived similarity. Perceived similarity predisposes people to more attraction, trust, and understanding than one would find in dissimilar individuals. Close, personal networks tend to be homophilous, although even weaker ties online can exhibit situational similarity (Walther & Boyd, 2002; Wright, 2000) in terms of stressful situations (i.e. health problems) that online communicators have in common. Similarity between a sender and receiver may increase the persuasiveness of the messages that are exchanged in online support groups/communities. For example, Wang, Walther, Pingree, and Hawkins (2008) showed that perceived similarity of support group members influenced perceptions of their credibility and, in turn, the evaluation of health information they provided. In addition, Wright (2000) and Campbell and Wright (2002) found that similarity was a key perception that was associated with social support satisfaction with support providers within health-related online support groups (which may be a motivation to participate). Perceptions of similarity appear to be particularly important in cases where individuals are living with a relatively unique life stressor, such as a rare disease. Online support groups/communities can facilitate the process of bringing people with rare diseases together. Moreover, the collective experience of the many people who make up these groups/communities along with the information they possess is often perceived as more credible than the information a person receives from health care providers (Coulson, Buchanan, & Aubeeluck, 2007; Hu & Sundar, 2009).

Convenience and Other Features of Computer-Mediated Communication

Several studies have found that participation in online support groups/communities is influenced by perceptions of the convenience, flexibility, and relative anonymity of computer-mediated communication associated with these groups. For example, online support groups/communities typically include greater accessibility (e.g., lack of time and travel constraints), anonymity, and the ability to obtain information without having to personally interact with others (Eichhorn, 2008; Green-Hamann, Campbell Eichhorn, & Sherblom, 2011; Wright & Bell, 2003) compared to face-to-face forms of social support. Unlike face-to-face support groups, online support venues offer participants access via computer and other Internet accessible devices 24 hours a day and access to potential support providers all over the world. So, it is not surprising that researchers have found that perceived convenience is associated with participation in these groups (Tanis, 2008; Wright & Bell, 2003). Online support groups/communities can also help people overcome accessibility barriers and high service fees associated with other (more traditional) sources of information and support, such as therapy (Barrera, Glasgow, McKay, Boles, & Feil, 2002). The asynchronous and mediated nature of online communication helps alleviate time and space barriers that exist for support settings that require the simultaneous presence of conversational partners (Turner, Grube, & Meyers, 2001). In addition, the anonymity of online groups/communities appears to influence increased self-disclosure of one's health issues to other group/community members (Huang, 2016; Li, Feng, Li, & Tan, 2015; Wright & Bell, 2003).

Future research should continue to examine these and other predictors of online support groups/communities using studies that draw upon broader, more diverse, samples of individuals who both currently use (and those who do not currently use) health-related online support groups/communities.

Key Theoretical Frameworks Used in the Study of Online Support Groups/Communities

This section provides an overview and analysis of key theoretical frameworks that have been used in the study

of online support groups/communities as well as an overview of studies that have drawn upon them. While several of these theories originated outside of the communication discipline (e.g., psychology), communication scholars have drawn upon them to help explain a variety of communication issues related to social support within online groups/communities.

The Buffering Effect Model

One prominent social support theory that has been applied to the study of online support groups/communities is the buffering effect model. Cobb (1976) first introduced the concept of the buffering model to explain how social support can protect a person against stress. The buffering effect model states that psychosocial stress will have negative effects on the health and well-being of those with little or no social support. Psychosocial stress can be defined as both acute and cumulative life and relational events that increase physiological responses in the limbic system. While most studies have focused on negative stressful events, positive events (e.g., marriage, the birth of a child) can trigger physiological responses. However, those with strong support systems tend to experience lessened or no negative effects on their health and well-being (Cohen & McKay, 1984; Thoits, 2011).

In terms of online support group/community studies that have drawn upon the buffering effect model, Bass, McClendon, Brennan, and McCarthy (1998) investigated ComputerLink, a computer support network for family caregivers of people with Alzheimer's disease. In a 12-month experiment, 102 caregivers were randomly assigned to an experimental group that had access to ComputerLink or to a control group that did not. This investigation examined whether caregivers in the experimental group had greater reductions in four types of care-related strain by the end of the 1-year study. The results indicated that ComputerLink reduced certain types of strain if caregivers also had larger informal support networks, were spouses, or did not live alone with their care receivers. More frequent use of the communication function was related to significantly reduced strain for caregivers who were initially more stressed and for non-spouse caregivers. Greater use of the information function was related to significantly lower strain among caregivers who lived alone with care receivers.

In another study, Wright (1999) examined social support, perceived stress, and coping strategies among 148 people from twenty-four health-related online support groups. The results indicated that the amount of time a person reported spending communicating with others in on-line support groups was positively related to the size of his or her support group network and satisfaction with the support he or she received in online support groups. Satisfaction with both on-line supportive relationships and face-to-face supportive relationships was correlated with degree of reduction in perceived life stress. Similarly, Wright (2000), in another study that drew upon a buffering effect model perspective, investigated older adults using SeniorNet (largely for health-related concerns). This study revealed that greater involvement with the online community was predictive of significantly lower perceived life stress.

Cumming, Sproull, and Kiesler (2002) drew upon the buffering effect model in random sample survey of an online support group for people coping with hearing loss. Their study revealed that two factors predicted more active participation in the group: (1) a lack of real-world social support and (2) being comparatively effective (i.e., having less disability and/or coping more effectively). In line with the buffering model, their findings revealed more active participation in the group was associated with greater self-reported psychosocial benefits, including better coping and emotional well-being. These authors also found that for some participants, increased participation in the online group was related to increased integration of potential supporters into people's offline social networks. Additionally, Eastin and Rose (2005), drawing from a buffering model perspective, found that online support activity increased online network size and increased overall levels of perceived social support for people seeking online support for a variety of issues, including health concerns.

Rains and Young (2009) conducted a meta-analysis of 28 published online support group studies dealing with people coping with health concerns, found that greater participation in their online support groups was related to increased perceived support, reduced depression, increased quality of life, and increased self-efficacy in terms of managing health problems. These authors argue that the findings are consistent with the buffering effect model. This study is one of the few that provides

empirical support for the buffering effect model across online support group studies.

Although the buffering model has been used widely in social support research (mostly in face-to-face supportive contexts), the literature suggests that empirical support for the theory is best garnered using longitudinal designs and careful controls for other variables that may influence stress levels. Unfortunately, none of the online support group/community studies to date have employed a longitudinal design, and most have only controlled for a few demographic variables at best. While the buffering model appears to be sound theoretically, relatively little is known about how features of the computer-mediated environment may influence the stress-buffering effects of social support (that have been observed in face-to-face contexts). In addition, all of the online support group/community studies to date have relied completely on self-report measures while face-to-face studies have used more sophisticated measures of stress (such as measuring cortisol in the bloodstream). The buffering model was also developed pre-Internet, and less is known about how the negative aspects of the Internet and social media may detract from or compliment the effects of support received online.

The Optimal Matching Model

Another theoretical framework that has received a large amount of attention in the online support group/community literature is the optimal matching model (Cutrona & Russell, 1990). Developed in the context of face-to-face social support, the optimal matching model (Cutrona & Russell, 1990) suggests that matching the specific type of support offered with the dimensions of a stressor (e.g., desirability, controllability, life domain, and duration of consequences) produces the most positive outcomes. For example, if an individual is seeking emotional support for a health concern and he or she perceives that members of his or her support network have expressed empathy, and acknowledged the severity of the issue, then this would be considered an example of an optimal match between the support seeker and support providers.

Goldsmith (2004) contends that optimal matches in supportive episodes may lead to more positive perceptions of relational partners and the type of support that is being offered, and this, in turn, may ultimately influence posi-

tive health outcomes. Yet it is also possible that a recipient of support may perceive some types of support negatively. For example, people may be reluctant to disclose certain problems or issues with members of their traditional face-to-face social networks in cases where there are relational difficulties. Such a case may be when individuals feel they will be judged by others due to behaviors related to their health problem (e.g., substance abuse, risky sexual behavior), or if they are coping with a problem that is difficult or embarrassing to talk about (Adelman, Parks, & Albrecht, 1987; Albrecht & Goldsmith, 2003; Green-Hamman & Sherblom, 2014; Wright & Miller, 2010).

Other studies have shown role obligations and reciprocity issues associated with traditional (offline) close ties can lead to problems in the provision of social support, and thus suboptimal support. Supporting a loved one who is ill, for example, can lead to increased conflict, resentment, and negative feelings for both parties involved (Albrecht & Goldsmith, 2003). Moreover, much of the research using the optimal matching model has focused on the controllability of a stressor (Cutrona & Russell, 1990; Cutrona & Suhr, 1992). Uncontrollable stressors are those in which an individual has relatively little potential to avoid the event or mitigate its consequences. As proposed by Cutrona and colleagues, action-facilitating types of support (i.e., information and tangible) tend to be more useful for a controllable stressor (Cutrona & Russell, 1990; Cutrona & Suhr, 1992). Action-facilitating support can help the receiver engage in behavior that will address the stressor or its consequences. McLaren and High (2015), drawing upon an optimal matching model framework, found that being over-benefited in informational support and being under-benefited in emotional and esteem support is hurtful, and hurt corresponded with negative relational consequences and reduced esteem improvement in a study of supportive relationships.

The model has provided some important insights into the supportive needs of individuals who seek support within online support groups/communities. For example, in one of the first online support group studies to use this framework, Braithwaite et al., (1999) conducted a content analysis of online support groups for people with disabilities. Their study found that the largest percentage of these messages offered emotional and informational support, whereas companionship and tangible assistance were

least frequently offered. They also found that many of the support messages directly addressed limitations and challenges associated with disability-related mobility, socialization, and self-care. This study illustrates that online support group/community participants typically seek specific types of support that optimally meets their needs (as opposed to seeking a wide variety of support). In another early study, Turner, Grube, and Meyers (2001) used optimal matching theory as a framework for explaining social support processes within online cancer support communities. These authors compared online participants' perceptions of illness support from the list with the support they received from a non-mediated relationship. The findings indicated that people participated more within the online community only when they perceived that the depth and support that they received from the online community was high, and when the depth and support they received from the specific person in their life was low.

More recently, Rains et al. (2015) conducted meta-analytic review of published content analyses of online support groups drawing upon an optimal matching model framework. Across the 41 content analyses examining social support messages shared in health-related groups/communities online, the prevalence of particular types of support messages varied based on several stressor dimensions relevant to illness. In other words, the most frequently offered types of social support were associated with the specific support needs of participants, implying that people living with health concerns gravitate toward groups/communities that offer very specific types of support (that optimally match their needs) as opposed to a wide variety of support messages. Rains et al. (2015) found that nurturant forms of support (i.e., emotional support; validation) were more common among content analyses examining health conditions likely to threaten personal relationships and involve loss in the form death. Action-facilitating types of support were more common among content analyses examining more chronic conditions.

While the optimal matching model has been applied to several online support group/community studies in recent years, the existing research has been largely limited to counting the most frequent type of support offered within particular online support groups/communities or some stratification within such groups (e.g., age, sex, type of illness) as opposed to examining whether or not optimal

matches are predictive of key health outcomes, such as reduced stress, lower depression, increased coping ability, and improved physical health. Future research would benefit from more elaborate designs that examine the link between optimal support matching (or suboptimal matching) and specific health outcomes. Such empirical work would be helpful in terms of refining this theory, particularly if it can account for computer-mediated influences of the type and quality of support offered and received in this context.

Social Comparison Theory

Social comparison theory (Festinger, 1954) has been another useful framework for understanding the process of social support within online groups/communities. Within the context of health-related support, individuals make assessments about their own health and coping mechanisms by comparing them to others in their social network (Helgeson & Gottlieb, 2000). Helgeson and Gottlieb (2000) argue that lateral comparisons, comparisons to similar others, may normalize people's experiences and reduce uncertainty and stress for those dealing with health concerns. However, when individuals compare themselves to others, their self-assessment could be either positive or negative. For example, if a person with cancer feels that he or she is coping with problems less effectively than others in his network (such as a friend or relative who has or had cancer or a similar life-threatening illness), this may create upward comparisons. This, in turn, could produce feelings of frustration or serve as a source of inspiration to the person to cope more effectively by emulating the successful behaviors of those other members. Conversely, downward comparisons to others in the social network, such as when an individual feels that he or she is coping better than other members, can lead to positive self-assessments and/or to negative feelings about people if interaction with the other members is perceived as being unhelpful.

Studies have found that participants often glean information about the status of their health issues through social comparisons that take place within supportive interactions in online support groups/communities (Batenburg & Das, 2015; Vilhauer, 2009; Wright & Bell, 2003). Such social comparison processes do not even require actual participation in the online group; rather,

individuals may engage in these practices passively by reading the posted group discussions. However, there are also several significant limitations of support community participation from a social comparison perspective. The most common involves stress resulting from hearing about difficulties experienced by other community members (Holbrey & Colson, 2013; Malik & Coulson, 2008). Other drawbacks include social comparisons with others who are improving (Malik & Coulson, 2008) and becoming negatively focused on one's illness (Holbrey & Coulson, 2013).

Unfortunately, the existing online support group/community studies that have drawn upon social comparison theory have not assessed the degree to which upward, downward, and lateral social comparisons influence key variables like health information seeking and health-related behaviors. For example, research using social comparison theory could be strengthened by linking a social comparison (such as an upward comparison) to specific behaviors. For example, it would be helpful to know if when a person makes an upward comparison to another online support group member whether or not he or she emulates the types of behaviors of this person. Existing online support group/community studies using this framework have not been able to demonstrate an empirical link between social comparisons and health-related behaviors or outcomes. Furthermore, current studies using this theory have been limited to qualitative studies or cross-sectional survey research.

Social Information Processing Theory/ Hyperpersonal Interaction

A fourth theoretical perspective that has been useful in terms of understanding the effects of computer-mediated channels on the perceptions of individuals who participate in online support groups/communities is Social Information Processing Theory (Walther, 1992). Specifically, the ways in which features of computer-mediated communication (CMC) alter participant perceptions of others within online support groups/communities (Walther & Boyd, 2002; Wright & Bell, 2003) has been the focus of several studies. Walther (1992) asserts that within the context of computer-mediated communication (CMC), message senders portray themselves in a socially favorable manner to draw the attention of message receivers and

foster anticipation of future interaction. Message receivers, in turn, tend to idealize the image of the sender due to overvaluing minimal, text-based cues. Idealized perceptions and optimal self-presentation in the computer-mediated communication process tend to intensify in the feedback loop, and this can lead to what Walther (1996) labeled as "hyperpersonal interaction," or a more intimate and socially desirable exchange than in face-to-face interactions.

Hyperpersonal interaction is enhanced when no face-to-face relationship exists, so that users construct impressions and present themselves "without the interference of environmental reality" (Walther, 1996, p.33), and it appears to skew perceptions of relational partners in positive ways, and in some cases, online relationships may exceed face-to-face interactions in terms of intensity (King & Moreggi, 1998; Walther, 1996; Wright, 2000). Despite the fact that individuals often disclose negative aspects of their health concerns, these studies have used hyperpersonal interaction to explain why online support group participants develop positive perceptions about support providers and often prefer online support over traditional face-to-face support. For example, Wright (2000) found that online support group participants perceived others in the group to be more interpersonally competent and able to provide higher quality support than members of their face-to-face network.

Moreover, according to Walther (1996), the reduced number of available nonverbal cues in CMC increases message-editing capabilities, and the temporal features of CMC allow communicators to be more selective and strategic in their self-presentation, form idealized impressions of their partners, and, consequently, engage in more intimate exchanges than people in face-to-face situations. These features of computer-mediated communication appear to offer people more interactional control over face-to-face communication, and they appear to influence perceptions of the attractiveness of online relational partners. For instance, Walther, Slovacek, and Tidwell (2001) found that individuals rated online interaction partners as more socially attractive and affectionate when a photo was not present compared to those who did view a photo of the interaction partner. In addition, dyads in computer-mediated settings also appear to self-disclose more than face-to-face dyads (Tidwell & Walther, 2002).

In terms of online support groups/communities, Wright

(2000) found that older adults using SeniorNet reported disclosing information about their health to anonymous members of the online community that they were reluctant to discuss with family members and friends in face-to-face settings. Anonymity led seniors using the community to feel safer disclosing health information within the online group. Walther and Boyd (2002) found that hyperpersonal interaction within online support groups/communities enhanced the attractiveness of seeking support within this context. In particular, these researchers found that perceived social distance from other participants facilitated perceptions of reduced risk in terms of disclosing sensitive or stigmatized issues (including health concerns). Eysenbach (2003) drew upon social information processing theory, and found that anonymity of virtual support communities was particularly helpful in terms of facilitating the participation of men living with health concerns to interact with others within these groups. Eysenbach (2003) argued that the reduced cues in this environment were particularly helpful for men to obtain online support for health concerns since they tend to be culturally and socially conditioned not to ask for help and support.

Although the online support group/community studies mentioned above have used Social Information Processing Theory (particularly the concept of hyperpersonal interaction) to explain attraction to using online support groups/communities and how perceptions of relational partners may become skewed in this context, no studies have directly manipulated or tested the effects of hyperpersonal interaction on perceptions of support providers and supportive messages. Rather, these studies simply used the theory to explain how characteristics of computer-mediated communication may skew perceptions of support providers/messages in positive ways. Future research would benefit from experimental studies that could directly test the effects of hyperpersonal interaction on online support group/community participants. Moreover, other theories, such as the Social Identification and Deindividuation Effects (SIDE) Model (Postmes, Spears, & Lee, 2000) posit that reduced nonverbal and social cues in text-based CMC tend to facilitate negative forms of communication (such as “flaming” or strongly attacking others or their ideas). Future theoretical work in this area would benefit from identifying elements of CMC that are more likely to lead to negative shifts in perceptions as

well as components that predict positive changes in perceptions of support providers/supportive messages.

Strength of Weak Ties Theory

Finally, a fifth theory that has been applied to the study of online support groups/communities is Granovetter’s Strength of Weak Ties theory (1973). This theory posits that the spread of social support is dependent upon the structure of communication networks in communities. Specifically, social networks tend to be made up of strong ties (such as close friends and family) as well as weak ties (such as coworkers, acquaintances, and people with whom one has infrequent contact). Small clusters made up of an individual and his or her strong ties may be linked to other strong tie clusters by weak ties. Without weak ties, communication can only flow among small clusters, and groups become information saturated. Weak ties reach larger numbers of people and longer distances than strong ties. Weak tie networks also offer greater opportunities for the dissemination of informational support to a larger number of people in comparison to information through strong tie networks alone (Granovetter, 1973). The strength of weak ties theory is essential in adding an element of structure to understanding online-supportive interactions and for distinguishing the roles and relationships inherent in the different positions people hold within online networks.

Individuals often seek support through weak tie networks instead of within their strong tie network because weak tie networks can provide access to more diverse points of view and information that may not be available within more intimate relationships (Adelman et al., 1987). Typically, individuals form close relationships with others who are similar to them in terms of demographics, attitudes, and backgrounds. This homogeneous preference can limit the diversity of information and viewpoints obtained about topics, including health concerns. Access to more diverse viewpoints about health problems can provide individuals with more varied informational support about health issues, and interacting with varied types of people increases the number of social comparisons a person can make about his or her health condition vis-à-vis others (Adelman et al., 1987). In addition to diversity of informational support, weak tie network members can also be a source of emotional support (Colineau & Paris,

2010; Winefield, 2006; Wright & Bell, 2003). According to Colineau and Paris (2010), people choose weak tie networks because of the members' ability to understand their experience and because of the emotional distance afforded by the online communication.

Another advantage of weak ties is that they tend to be more plentiful than strong ties, and they are more likely to be different from the receiver and from one another. This means there is a greater likelihood of being able to find an expert in a particular area in weak tie rather than strong tie sources. Members of weak tie networks may be more willing to talk about illness since these individuals tend to be less emotionally attached to a person (Adelman et al., 1987). Weak tie network members are often able to provide more objective feedback about a problem since they are less emotionally attached to a person with health problems than family and friends. According to Goldsmith and Albrecht (2011), weaker ties tend to be perceived as helpful when a person is coping with an issue that requires new information or skills (that may be limited within a close-knit family or friendship social network). These features of weak ties can be beneficial to people who are coping with health concerns that may be difficult to ameliorate in strong ties due to lack of information and relational problems in close relationships (Winefield, 2006; Wright & Miller, 2010).

Several researchers have found weak tie network theory to be applicable to explaining why some individuals prefer to obtain social support online (including online support groups/communities) versus via traditional offline networks (Green-Hamman & Sherblom, 2014; Wright & Rains, 2013; Wright, Rains, & Banas, 2010; Wright & Miller, 2010). When members of traditional offline social networks have limited knowledge about a stressful situation, there is evidence that individuals often turn to online sources of information and social support (Wright & Miller, 2010) despite the fact that they may feel less close relationally to the people with whom they interact online. Additionally, when online sources are able to offer specialized information about a problem and/or may be in a better position to offer desired types of social support (such as increased empathy and less judgment due to sharing similar problems).

While online support group/community scholars have been drawn to Granovetter's theory of the strength of weak ties, studies to date have not measured the actual

strength of ties among participants within online support group/community. Social network analysis provides a tool to examine the actual strength of ties within online communities as well as the degree of communication between participants. Future work in this area would benefit from conducting social network analyses of online support groups/communities and determining how these networks compare to participants' offline (face-to-face) support networks. Moreover, scholars have not dealt with the issue that the strength of ties is dynamic. For example, people within an online support group/community may begin their relationship as weak ties. However, as time goes on, the relationship may evolve into a stronger tie (including meeting in the face-to-face world). Future research using this theory would benefit from measuring and explaining how the strength of ties between support group/community participants changes over time.

Overall Critique of Theoretical Frameworks Used in Online Support Group/Community Studies

Reviewing how these theories have been applied to studies of online support groups/communities, there appears to be a need to develop additional theoretical frameworks that integrate overlapping concepts within these theories. The theories presented in this section were largely developed in different disciplines, including psychology, sociology, and communication. In addition most of these theories were developed prior to the advent of the Internet and online support groups/communities. Yet, many of them exhibit conceptual overlap. For example, the reduced cues in computer-mediated communication (particularly anonymity in text-based online support groups as well as the geographical dispersion of participants) and the hyperpersonal interaction that often results from them creates an environment where weak tie relationships are plentiful. However, no theoretical work to date has attempted to merge concepts from Social Information Theory and the Theory of Weak Ties. Moreover, these features of online support groups/communities also bring together people who share similar health concerns, and this increases the opportunity for optimal matches between support seekers and support providers. Few studies have merged concepts from the Optimal

Matching Model with related concepts from the Theory of Weak Ties (especially reduced judgment and stigmatization from others due to sharing similar health concerns). Finally, theories such as Social Information Processing, Social Comparison Theory, and the Theory of Weak Ties are more communication process-oriented, while theories such as the Buffering Effect Model of social support are more health outcome-oriented. Future theoretical work would benefit from integrating overlapping concepts from these theories into a more comprehensive theoretical framework that accounts for perceptions, communication behaviors, and health outcomes.

Online Social Support Groups/Communities, Coping, and Health Outcomes

The following sections review and critique studies that have focused on the relationship between online support (obtained in online support groups/communities) and coping as well as online support group/community participation and health outcomes.

Online Social Support and Coping

One variable that is influenced by online social support within online support groups/communities is coping. Similar to offline coping (see Folkman & Moskowitz, 2004), online coping can be defined as thoughts and behaviors facilitated by online sources of support that help people manage stressful situations. There are several indications that the Internet is of rising importance when it comes to coping with stressful situations (van Ingen & Wright, 2015; Wright & Bell, 2003; Yoo, Shah, Shaw, Kim, Smaglik, Roberts, et al., 2014). These scholars have suggested that some of the mechanisms of coping are different online in comparison to offline coping, which implies that more research and theory development in this area is needed. Additionally, it appears that many individuals cope with stressful life events using *both* offline and online social networks (Vergeer & Pelzer, 2009), so it is important to consider how sources of online and offline support influence coping. However, few studies to date have tended to focus on coping within one context or the other (van Ingen & Wright, 2015).

In general, the Internet provides a wealth of informa-

tion about a vast array of health concerns which may be important for helping individuals cope with their health issues (Wright & Bell, 2003). As we have seen, one advantage of using online support groups/communities over offline social networks for coping with health issues is that they provide access to a larger number of individuals how can offer very specific types of support individuals are seeking (which can make up for deficiencies in terms of support available in face-to-face social networks). Moreover, individuals who tend to cope with problems in a certain way, such as seeking information about the problem or venting their frustrations to others, are likely to seek out individuals who will provide them with the type of support that facilitates their preferred coping style (Wright & Rains, 2013).

These features appear to play a key role in the problem-focused dimensions of online coping. For example, Frost and Massagli (2008) compared online and offline support group members and found that online support group/community users scored significantly higher in active coping approaches (as opposed to avoidance coping) and planning their self-care. Other researchers argue that the use of online support groups/communities can be conceptualized as a type of self-efficacy or skill-building intervention to restore a degree of control over a serious chronic health problem (Martz & Livneh, 2007; Rottmann, Dalton, Christensen, Frederiksen, & Johansen, 2010). In other words, online support has a potential to influence perceptions of coping competence.

Most individuals have an innate desire for connection with others, but when they feel disconnected from their social networks due to health problems, loneliness is often the result. Loneliness is distinct from social isolation (De Jong Gierveld, 1998); the former is an experienced deficiency in the quality of one's network, and the latter is actual disconnectedness. Loneliness is often related to inadequate social support (Hudson, Elek, & Campbell-Grossman, 2000), and both the size and quality of one's social network are important determinants of the amount of coping resources individuals can access (De Jong Gierveld, 1998). Studies suggest that people who feel socially disconnected (including due health concerns) may also use the Internet, for distraction, entertainment, or to escape daily life as a form of coping (Vorderer, Klimmt & Ritterfeld, 2004). Yet, other individuals are more proactive in their Internet use and try to battle

health-related stigma and loneliness by searching for new people or socializing with others online (Saunders & Chester, 2008; Wright & Bell, 2003).

Other people, such as individuals with health problems and disabilities that limit mobility, may find it difficult to form and maintain relationships with others in the offline world (Braithwaite et al., 1999). As a result, they may voluntarily withdraw from interacting with members of offline networks, which often leads to an increased sense of social isolation and loneliness. In an attempt to compensate for these issues, many individuals turn to online support groups/communities to reduce feelings of loneliness and social isolation as well as to obtain support to help them cope with health-related issues.

Future research on online support groups/communities would benefit from attempting to better integrate theories of coping with theories of social support. Although they overlap to a considerable degree, both concepts have typically been researched separately. Studies of social support and studies of coping have evolved as two separate fields in many ways. However, both fields are related, and there is a need for theoretical development which takes into account the relationships between them. Future work would also benefit from examining empirical links between social-supportive messages and their effects on coping strategies. Finally, researchers have argued that the inability to receive immediate feedback (Haberstroh & Moyer, 2012) and receiving limited or negative feedback (Yli-Uotila, Rantanen, & Suominen, 2014) within online support groups/communities may negatively influence coping strategies. Such negative influences on coping within online groups/communities should be investigated in future studies.

Online Social Support and Health Outcomes

The potential outcomes of obtaining social support in online support groups/communities have received increased attention in recent years, particularly in terms of how support received in these contexts is associated with improved psychological and physical health outcomes. As we have seen, social support appears to improve one's ability to cope with a stressor or positively impact one's appraisal of stressors. Social support can also directly improve a person's psychological health by providing a person with new coping resources or by elevating a per-

son's mood (Aneshensel & Stone, 1982; Cobb, 1976). Moreover, the perception that one could gain access to supportive others in online communities may make stressors appear less severe and more manageable than if such resources were not available. This can help an individual to feel better about the health issues he or she may be facing, which (in cases where one's mood is elevated) leads to the release of endorphins and other chemicals into the bloodstream that can relieve stress (Billings & Moos, 1984; Lazarus & Folkman, 1984; Uchino, 2004).

Most research examining the physical and mental health outcomes of support acquired in online support groups/communities has tended to focus on positive outcomes. Moreover, mental health outcomes, such as depression, appear to be more common than physical health outcomes in studies of online support groups/communities (See reviews by Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004; Hong, Pena-Purcell, & Ory, 2012; Rains et al., 2015; Rains & Young, 2009).

Several studies provide evidence that simply participating in a support community can be beneficial. For instance, the amount of time spent using online support communities has been shown to be associated with users' size and satisfaction with their online support network (Wright, 2000) as well as decreased rates of depression over the course of a year among depression community members (Houston, Cooper, & Ford, 2002). In addition, Wright et al. (2010) found that weak tie preference was negatively associated with perceived stress. Participating in health-related online support groups/communities has also been linked to other positive mental health outcomes such as self-efficacy and optimism (Mo & Coulson, 2013). Other research has considered outcomes associated with members' perceived benefits or satisfaction with their community. Support community satisfaction is inversely associated with perceived stress (Wright, 2000) and the perceived benefits of online support are associated with members' perceived coping ability (Seckin, 2013). In general, studies have shown a positive association between members' well-being and support received from using online groups/communities (Mo & Coulson, 2013; Oh, Ozkaya, & LaRose, 2014; Rains & Keating, 2011).

Scholars have also examined other types of health outcomes associated with receiving social support in various online support groups/communities. For example, Turner, Robinson, Tian, Neustadt, Angelus, Russell,

Mun, and Levine (2013), in a study of an online support community for people with diabetes, found that increases in emotional support messages were associated with improved blood sugar control among patients over the course of the intervention. Studies examining an online support group for women with breast cancer have shown that receiving emotional support message is associated with lower breast cancer concerns (Kim et al., 2012; Yoo et al., 2014). Moreover, studies of student social networking site users have revealed that perceived emotional support from one's social networking site is positively associated with health-self efficacy (Oh et al., 2013) and negatively associated with perceived stress (Wright, 2012).

Other researchers have found that time spent using online communities is associated with users' size and satisfaction with their online support network (Wright, 2000) as well as users' perceptions of informational and emotional support received in HIV/AIDS (Mo & Coulson, 2012) and weight-loss (Hwang, Ottenbacher, Green, Cannon-Diehl, Richardson, Bernstam, & Thomas, 2010) communities. One study found that people who used the Internet perceived significantly greater levels of support available than did non-users, including greater availability of emotional, tangible, and companionship support (Hampton, Goulet, Rainie, & Purcell, 2011). Liu and LaRose (2008) found a positive relationship between perceived support available online and amount of time spent using the Internet. However, Batenburg and Das (2015) found that the relationship between online participation (e.g., posting messages) and psychological well-being was moderated by pessimistic social comparisons. Specifically, these authors found that increases in downward comparisons predicted increased activity in an online support group for women with breast cancer (suggesting that social comparisons within these groups/communities are an important moderating variable to consider). Moreover, the therapeutic value of writing about one's thoughts and feelings in online support groups/communities has been found to alleviate depression and loneliness, and reduce pain and stress (See Campbell & Pennebaker, 2003).

Online support groups/communities also help people reduce their sense of isolation (Holbrey & Colson, 2013; Vilhauer, 2009). These groups/communities can help participants acquire new (specialized) information (Malik & Coulson, 2008; Yli-Uotila et al., 2014). Online support

groups/communities appear to influence greater self-efficacy among users in terms interacting with their health care provider (Holbrey & Colson, 2013). However, the potential negative effects of using online support groups/communities is a relatively understudied area, and future research is needed to assess ways in which online support groups/communities may contribute to negative mental and physical health outcomes.

Finally, whether people are active or passive participants within online support groups/communities appears to influence health outcomes in a variety of ways. For example, an individual may actively participate in a community by making and responding to others' posts or by "lurking" and reading the posts of others but not actively contributing. Previous studies have found that as many as 50% of participants in online support groups/communities were lurkers (Batenburg & Das, 2015; Setoyama, Yamazaki, & Namayama, 2011). Mo and Coulson (2010) found that relative to lurkers, active posters were significantly more likely to report that they received social support and useful information from the group and they were more satisfied with other members. Similarly, Setoyama et al. (2011) found that lurkers were less satisfied with health information than active participants. Van Uden-Kraan, Drossaert, Taal, Seydel, and van de Laar, (2008) found that active participants reported greater psychological well-being than lurkers within an online support groups. Moreover, Lawlor and Kirakowski (2014), in a study of mental-health communities, found that active participants reported better stigma recovery than lurkers.

Unfortunately, the existing literature regarding studies that have investigated the links between online social support and health outcomes appears to be fragmented. Some studies focus on psychosocial health outcomes such as well-being while others are more focused on physical health outcomes. Many of the physical health outcome measures have been operationalized in relatively unreliable ways, such as an over-reliance on self-reports or using physical or biological measures that are open to multiple interpretations regarding cause and effect and changes in these outcomes. Greater identification of key health outcomes and integration of the literature on psychosocial health outcomes and physical health outcomes is needed.

Limitations of Existing Online Support Group/Community Research/Theory and an Agenda for Future Research

Despite the promise of online support groups/communities and their potential effects on health outcomes, there are many limitations of the existing research in this area that need to be addressed in future work. While a number of theoretical frameworks have been utilized in the study of online support and health outcomes, this area would benefit from the development of new theories that shed light on features of online support that are unique from offline supportive contexts. This section discusses some of the key limitations to the existing research as well as fruitful areas of research and theory development within this area.

One of the first limitations of previous studies concerns the need to account for the influence of overlapping sources of social support on key outcome variables, such as stress and depression. For example, according to Haythornthwaite (2002), both online and off-line supportive exchanges influence health outcomes. In short, it becomes difficult to separate online supportive influences from off-line influences. Most individuals typically mix face-to-face contact with e-mail, or searching the Internet for health information and then discussing it with people in their face-to-face social network. Future research should assess the interaction of both online and face-to-face support networks on key outcome variables such as satisfaction, well-being, stress, depression, and physical health outcomes while also comparing differences between support from these two networks in terms of how they uniquely contribute to these outcomes.

Future research in this area would benefit from the development of theories and methods that take into account a more comprehensive perspective of the influence of social support on health outcomes, including the main effects and interaction effects of online and off-line sources of social support, additional predictors of engaging in online support, mediated variables (i.e., the influence of different computer-mediated channels, contexts), and key demographic and environmental variables on health outcomes. Moreover, most studies of online support have tended to be studied in cross-sectional designs, with relatively small samples, and online support has primarily been measured using scales that were developed to measure offline support (and in many studies these measures

have been crudely adapted to online environment). Such approaches make it difficult to isolate the implications stemming from the unique characteristics of online interaction.

Although computer-mediated channels are able to connect individuals with larger, more diverse, networks of individuals who may be able to offer types of social support that transcend the quantity and quality of support within traditional face-to-face networks (i.e., weak tie support), less is known about potential negative aspects of weak tie support, such as the potential for increased deception, manipulation, cyber-surveillance, and other problems that can occur when communicating with relative strangers (Barak, Boniel-Nissim, & Suler, 2008). Given the potential benefits of computer-mediated support groups and the risks associated with seeking support online, it is important for support researchers to gain a better understanding of how group members evaluate the credibility of online support providers and the supportive messages they create.

Finally, relatively little is known about how minority groups and other populations facing health disparities use computer-mediated support groups. However, it appears that members of minority groups engage in a variety of online social support activities, and individuals within these groups may benefit from online support group/community interventions (Hong, Pena-Purcell, & Ory, 2012). For example, Fogel, Albert, Schnabel, Ann Ditkoff, and Neugut (2003) found that while African-Americans, Hispanics, and Asian Americans tend to use the Internet less than whites, their Internet use was associated with greater ability to talk with someone about problems and to obtain other types of social support. Weinert and Hill (2005) found that rural women (including a high percentage of minorities) using an online support group intervention had lower levels of depression and higher self-reported management of day-to-day chronic illness symptoms than a control group of similar rural women living with chronic illness. Irrizary, Downing, and West (2002) and Wright (2000) found that online support communities were helpful in terms of helping isolated older adults facing health concerns to become better connected with other individuals with similar circumstances. In short, there is a great deal of potential for scholars to develop and test online support group/community interventions with underserved populations.

Conclusion

The findings from the reviewed literature provide support for the idea that online support groups/communities appear to benefit certain populations (e.g., people coping with stigmatized health issues, individuals who lack support resources in the face-to-face world). As online support among members of these populations will likely continue in the future, researchers need to continue gaining a better understanding of the nature of online support group/community processes and outcomes. While scholars have identified a number of theoretical frameworks that help to explain key advantages and disadvantages of online support groups/communities and their relationship to health outcomes, new theoretical perspectives are needed

to capture the complexity of this phenomenon. Scholars should work on integrating overlapping concepts from the major theories discussed in this article, and they should take into account the unique influences that computer-mediated communication has on supportive relationships within these groups/communities. Although more recent studies have moved toward experimental designs and intervention approaches in an effort to better predict health outcomes for individuals who participate in such groups/communities, more research is needed to gain a better understanding of intervening variables that may influence the relationship between online support and various outcomes. Moreover, future studies in this area would benefit from using longitudinal designs and that target the health needs of more diverse populations.

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